

**STATE OF VERMONT
PUBLIC SERVICE BOARD**

Docket No. _____)
)
)
Petition of twenty Vermont utilities and)
Vermont Public Power Supply Authority)
requesting authorization pursuant to 30)
V.S.A. § 248 for the purchase of shares of)
218 MW to 225 MW of electricity from H.Q.)
Energy Services (U.S.) Inc. commencing)
November 1, 2012 through 2038, issuance of)
findings that such purchases are entitled to)
rate recovery assurance, and requesting)
certain approvals under 30 V.S.A. § 108)
)

**PREFILED TESTIMONY OF
CRAIG KIENY
ON BEHALF OF

VERMONT ELECTRIC COOPERATIVE, INC.**

August 17, 2010

Craig Kieny's prefiled testimony supports Vermont Electric Cooperative's ("VEC's") decision to enter the Power Purchase and Sales Agreement with H.Q. Energy Services U.S. Inc. He explains (i) why the HQUS PPA is needed to meet VEC's demand requirements (Section 248(b)(2)(need)); (ii) how the HQUS PPA provides an economic benefit to VEC and its customers (Section 248(b)(4)(economic benefit)); and (iii) how it is consistent with the VEC IRP (Section 248(b)(6)(IRP)).

TABLE OF CONTENTS

- 1. Introduction**
- 2. VEC s HQUS PPA Allocation**
- 3. Section 248(b)(2) Need**
- 4. Section 248(b)(4) Economic Benefit**
- 5. Section 248(b)(6) IRP**

Exhibits

Exhibit VEC-1 Base Annual Net Energy Requirement vs. Committed Resources 2012-2038

Exhibit VEC-2 Base Annual Net Energy Requirement vs. Committed + Pending/Proposed Resources 2012-2038 (Excluding Proposed HQUS PPA)

Exhibit VEC-3 Base Annual Net Energy Requirement vs. Committed + Pending/Proposed Resources 2012-2038 (Including Proposed HQUS PPA)

Exhibit VEC-4 Base Annual Net Energy Requirement vs. Committed + Pending/Proposed Resources 2012-2038 (Including Proposed HQUS PPA + WEC/VEC Sleeve Agreement)

Exhibit VEC-5 Collateral Threshold Calculations (CONFIDENTIAL and filed under seal).

Exhibit VEC-6 Proposed HQUS PPA Price \$/MWh vs. Volatile Market (CONFIDENTIAL and filed under seal)

Exhibit VEC-7 Proposed HQUS PPA Price \$/MWh vs. Market Based on PPA with New Natural Gas Combined Cycle Plant (CONFIDENTIAL and filed under seal)

Exhibit VEC-8 Proposed HQUS PPA Price \$/MWh vs. Market Based on PPA with New Biomass Plant (CONFIDENTIAL and filed under seal)

Exhibit VEC-9 Proposed HQUS PPA Price \$/MWh vs. Market Based on NYMEX

Natural Gas Futures (CONFIDENTIAL and filed under seal)

**Exhibit VEC-10 – ISO-NE Hub Day Ahead Market Average 5x16 LMP vs. NYMEX
Natural Gas Settlement Prices**

**Exhibit VEC-11 –NYMEX Natural Gas Benchmark Annual Avg Settlement Prices
(CONFIDENTIAL and filed under seal)**

**STATE OF VERMONT
PUBLIC SERVICE BOARD**

Docket No. _____

Petition of twenty Vermont utilities and)
Vermont Public Power Supply Authority)
requesting authorization pursuant to 30)
V.S.A. § 248 for the purchase of shares of)
218 MW to 225 MW of electricity from H.Q.)
Energy Services (U.S.) Inc. commencing)
November 1, 2012 through 2038, issuance of)
findings that such purchases are entitled to)
rate recovery assurance, and requesting)
certain approvals under 30 V.S.A. § 108)
)
)
)

**PREFILED TESTIMONY OF
CRAIG KIENY
ON BEHALF OF**

VERMONT ELECTRIC COOPERATIVE, INC.

1 **1. Introduction**

2 **Q1. Please state your name, occupation and business address.**

3 A1. My name is Craig Kieny, and I am Senior Power Resources Planner for Vermont Electric
4 Cooperative, Inc. (VEC or the Company).

5 **Q2. Please summarize your education, training and professional experience.**

6 A2. I received a Bachelor of Science Degree in Electrical Engineering from the University of
7 Vermont in 1984. In 1988, I received a Masters of Business Administration, also from
8 the University of Vermont. After receiving my MBA, I worked for the Burlington
9 Electric Department (BED) for ten years. When I left BED in 1998, I was the Manager

1 of Engineering, Planning and Rates.

2 **Q3. Have you previously testified before the Vermont Public Service Board?**

3 A3. Yes. I have testified before the Public Service Board (“PSB” or the “Board”) in
4 numerous dockets on behalf of BED, VEC and Citizens Communications Company.

5 **Q4. What is the purpose of your testimony?**

6 A4. My testimony supports VEC’s decision to enter the Power Purchase and Sales Agreement
7 (“HQUS PPA”) with H.Q. Energy Services U.S. Inc. (“HQUS”) that is subject to Board
8 review in this proceeding. The HQUS PPA is described in the joint prefiled testimony of
9 William Deehan and Christopher Cole and is included as Exhibit Petitioners Joint-3.

10 Specifically, my testimony addresses why the HQUS PPA is needed to meet
11 VEC’s energy requirements (Section 248(b)(2)(need)); how the HQUS PPA provides
12 economic benefits to VEC and its members (Sections 248(b)(4)(economic benefit)); and
13 how the HQUS PPA is consistent with VEC’s IRP (Section 248(b)(6)(IRP)). My
14 testimony is intended to complement and supplement the “statewide” joint prefiled
15 testimony of Mr. Deehan and Mr. Cole that is offered on behalf of all Petitioners. My
16 testimony also discusses the Suballocation Agreement that VEC has entered into with
17 Washington Electric Cooperative (“WEC”) to take up to WEC’s full energy quantity and
18 demonstrates need for such additional allocation. I will also demonstrate need for up to
19 25 MW in additional allocation in the event that any other current participant in HQUS
20 PPA drops out.

2. **VEC s Allocations**

a. **HQUS PPA Power Purchase Entitlements**

Q5. Please describe VEC s power purchase entitlements under the proposed PPA.

A5. The HQUS PPA includes two tables specifying the Energy Quantity (as that term is defined in the PPA) to be purchased by each Buyer for different periods of the term of the PPA. Table 3.2(c)(i) defines the Energy Quantity with the transfer capability of Highgate at 218 MW. Assuming that limitation, VEC's Energy Quantity in each Period is shown in the following table.

Schedule	Start Date	End Date	VEC Energy Quantity (MW)
Period 1	11/1/2012	10/31/2015	15.236
Period 2	11/1/2015	10/31/2016	15.236
Period 3	11/1/2016	10/31/2020	15.236
Period 4	11/1/2020	10/31/2030	16.236
Period 5	11/1/2030	10/31/2035	4.004
Period 6	11/1/2035	10/31/2038	4.004

There is a possibility that Highgate's transfer capability will be increased to 225 MW during the term of the PPA, as explained in the Deehan/Cole testimony. If so, the total Energy Quantity of the PPA will increase to 225 MW and each Buyer's allocation will be as defined in Table 3.2(c)(ii) of the PPA. VEC's Energy Quantity in each Period will change to those shown below:

Schedule	Start Date	End Date	VEC Energy Quantity (MW)
Period 1	11/1/2012	10/31/2015	17.000
Period 2	11/1/2015	10/31/2016	17.000
Period 3	11/1/2016	10/31/2020	17.000
Period 4	11/1/2020	10/31/2030	17.000
Period 5	11/1/2030	10/31/2035	3.845
Period 6	11/1/2035	10/31/2038	3.845

Q6. How do the quantities of energy you are purchasing under the HQUS PPA compare to your current power purchases from Hydro-Quebec?

A6. VEC currently purchases 31.338 MW through Vermont Joint Owner (“VJO”)’s Firm Power and Energy Contract with Hydro Quebec (the “VJO Contract”). VEC’s entitlements in the various schedules and their final date of delivery are shown in the table below:

Schedule	VEC Entitlement (MW)	Final Date of Delivery
C-1	19.995	10/31/2012
C-2	5.132	10/31/2012
B	0.415	10/31/2015
C-3	0.125	12/31/2015
C-4a		
C-4b	5.671	10/31/2020

As the table shows, VEC has 25.127 MW in Schedules C-1 and C-2 expiring by

1 November 1, 2012. The energy from these two schedules supplies approximately
2 165,084 MWhs on an annual basis assuming a 75% annual capacity factor. To
3 summarize, the HQUS PPA will replace roughly 60% of annual deliveries under
4 Schedule C-1 and C-2 of the VJO Contract and 48% of the annual deliveries of all
5 schedules of VJO Contract.

6 a. **Additional Entitlements under Suballocation Agreement with WEC**

7 **Q7. Please describe the Suballocation Agreement with WEC.**

8 A7. WEC and VEC have agreed that WEC would sub-allocate its entitlement to VEC subject
9 to the ability to take back all or a portion of the allocation in two circumstances. First, if
10 WEC is unable to meet its load demand with existing or proposed supply resources, upon
11 one year's notice, its must take back and VEC must release up to all of WEC's allocation
12 on a permanent basis. Second, if WEC has an unplanned interruption of an existing
13 supply resource, it may take back up to all of its allocation on one month's notice. VEC
14 resumes its access to the WEC allocation once the interruption ends. WEC explains its
15 need for this arrangement in its testimony.

16 **3. Section 248(b)(2) – Need**

17 **Q8. Section 248(b)(2) requires the Board to find that this PPA is required to meet the**
18 **need for future demand for service which could not otherwise be provided in a more**
19 **cost effective manner through energy conservation programs and measures and**
20 **energy efficiency and load management measures. Please explain how the HQUS**

1 **PPA satisfies this criterion.**

2 A8. Exhibit VEC-1 provides a comparison of VEC's projected need against its currently
3 committed resources using VEC's base load forecast assumptions net of the projected
4 impact of energy conservation programs implemented by Efficiency Vermont in VEC's
5 territory.

6 The Exhibit shows VEC has sufficient committed resources to cover and/or hedge
7 approximately 85.9% of its projected annual energy requirements for 2012. In other
8 words, VEC is projecting a need for energy (referred to as an "open position") of 16.1%
9 in 2012. By 2013, the first full year of the proposed contract, the open position increases
10 to 40.3% due the expiration of (1) a contract with Entergy for the purchase of power
11 from Vermont Yankee, (2) Schedules C-1 and C-2 of the VJO Contract, and (3) several
12 VEPPI contracts. VEC's open position increases to 80.2% by 2015 with the expiration of
13 various short-term contracts. The open position grows slightly each year thereafter due to
14 expected load growth and the expiration of VEPPI contracts and the remaining schedules
15 of the current VJO Contract.

16 Exhibit VEC-2 provides a comparison of VEC's projected need against its
17 currently committed resources plus pending/proposed resources not including the
18 proposed HQUS PPA. The pending/proposed resources include a 10 MW fixed-price
19 contract with First Wind from the project in Sheffield¹, an 8 MW entitlement of the

1 VEC has entered two contracts with First Wind to purchase power from the wind project First Wind hopes to develop in Sheffield, Vermont. The first contract is for 10 MW at fixed prices for 10 years from the commercial

1 Kingdom Community Wind project in Lowell, and VEC's projected share of SPEED
2 Standard Offer Contracts. The Exhibit shows that even with the addition of these
3 resources, VEC is projecting an open position of 26.3% in 2013 and 66.0% in 2015.

4 Exhibit VEC-3 provides a comparison of VEC's projected need against its
5 currently committed resources plus pending/proposed resources including the proposed
6 HQUS PPA. If approved by the Board, the proposed PPA will supply VEC with
7 approximately 89,000 MWhs per year, or approximately 20.1% of VEC's annual energy
8 requirements projected for 2013. The Exhibit shows that even including the power to be
9 purchased under the HQUS PPA and other pending/proposed purchases, VEC is
10 projecting a 6.1% open position in 2013 and a 45.6% open position in 2015.

11 Exhibit VEC-4 shows that including the WEC entitlement of up to 4.0 MW does not
12 impact VEC's open position in 2013 2015 but reduces VEC's open position to 36.5% in
13 2017, the first full year VEC may purchase a portion of WEC's entitlement.

14 In summary, the exhibits clearly show that VEC has a need for the power under
15 any reasonable assumptions for load, possible alternative resources, and energy efficiency
16 implementation. In fact, under VEC's Base Case scenario (defined below), even if
17 VEC's load net of energy efficiency were reduced by more than 6.1% in 2013 and over

operation date. The second contract is for 10 MW at a discount to the Real-Time spot market price for 10 years from the commercial operation date, and 20 MW at a discount to the Real-Time spot market price for years 11-20 after the commercial operation date. The output from the fixed price contract has been included in the hedged percentages discussed earlier. The commercial operation date for the Sheffield project is uncertain at this time due to the appeal of the project's Storm Water Runoff Permit. For planning purposes VEC is assuming a commercial operation date of July 1, 2011.

1 45.0% in 2015, the HQUS PPA would still be needed in its entirety.

2 In addition, the above analysis supports VEC's need for the additional allotment it
3 would receive under the Suballocation Agreement with WEC and/or up to 25 MW if
4 available pursuant to the HQUS PPA term which entitles parties to take a pro rata share
5 of a "Removed Buyer's" entitlement.

6 **Q9. Please explain the load assumptions used in your needs assessment analysis.**

7 A9. VEC performed two load forecasts: A Base Case pre-energy-efficiency-adjusted load
8 forecast (the "Base Case Forecast") and a low pre-energy-efficiency-adjusted load
9 forecast (the "Low Forecast"). VEC's exhibits are based on the Base Case Forecast.
10 VEC created the Low Forecast to assess whether it would still need the HQUS PPA even
11 if its loads were to decrease.

12 The Base Case Forecast is based on VEC's actual load for August 2008 July
13 2009 adjusted for the loss of the majority of the load at the Ethan Allen factory in
14 Beecher Falls resulting from a management decision to move processes out of state in
15 late August 2009. These monthly loads are kept constant through the end of the analysis.

16 The Low Forecast is based on VEC's actual load for August 2008 July 2009,
17 adjusted for loss of load at the Ethan Allen factory and then decreased by 3% per year.
18 These monthly loads are kept constant through the end of the analysis.

19 Both forecasts are then adjusted for the projected impact of energy efficiency
20 programs implemented by Efficiency Vermont in VEC's territory.

1 **Q10. Please describe the assumptions used for the impact of Efficiency Vermont's**
2 **programs.**

3 A10. The assumptions are those used in VEC's most recent IRP filed in July 2008. Please see
4 Appendix 3 of the IRP for a detailed explanation of how the projections were developed.

5 **Q11. Do the projected demand reductions offset VEC's need for more power supply?**

6 A11. No. It is apparent from Exhibit VEC-3 and Exhibit VEC-4 that, considering load
7 reductions from these efficiency programs and all pending/proposed resources, the power
8 from the HQUS PPA is needed even if VEC's net load forecast is overstated by 6.1% in
9 2013 and over 35.0% in 2017 and beyond.

10 **Q12. Are the needs identified above dependent upon the relicensing of Vermont Yankee?**

11 A12. No. VEC's contract with Entergy for Vermont Yankee power expires in March 2012.
12 VEC has not committed to any purchase of the output from Vermont Yankee if it is
13 relicensed.

14 **4. Section 248(b)(4) – Economic Benefit**

15 **Q13. Section 248(b)(4) requires the Board to find that the HQUS PPA will result in an**
16 **economic benefit to the state and its residents. Please explain how this criterion is**
17 **satisfied from the perspective of VEC's members.**

18 A13. The PPA provides a number of economic benefits, which are more fully explained below,
19 including:

- 20
- Favorable credit terms;

- 1 • A flexible price hedge;
- 2 • Prices that compare favorably to other alternatives;
- 3 • A partial hedge against the impact of the Regional Greenhouse Gas Initiative (RGGI)
- 4 and potential carbon legislation;
- 5 • A favorable annual PPA price adjustment mechanism;
- 6 • Power with renewable attributes at close-to-non-renewable prices;
- 7 • A 7 day x 16 hour product not commonly found among alternatives available to
- 8 VEC; and
- 9 • A PPA price in the initial year using a benchmark which is relatively low from a
- 10 historic perspective.

11 **Q14. Please discuss the favorable credit terms in the HQUS PPA.**

12 A14. As an initial matter, in considering the impact of the credit terms in the PPA, it is

13 important to keep in mind that VEC's entire letter of credit capacity – for all transactions

14 – is \$20,000,000 minus our outstanding line of credit balance (with a cap on line of credit

15 usage of \$10,000,000). Any power contract that includes attractive credit ***begin

16 confidential information*** [REDACTED]

17 [REDACTED]

18 [REDACTED] ***end confidential information*** valuable to VEC as it enhances our flexibility to

19 consider other power arrangements and balance our power supply portfolio.

depends on VEC's credit rating. For VEC, *****begin confidential information*****

similar credit quality.²

post under certain market scenarios.

² VEC does have two suppliers who technically provide an unlimited collateral threshold; however, in considering new contracts for VEC, they will evaluate their exposure based on the mark-to-market calculation of their existing VEC contracts. When there are no existing contracts, these suppliers will limit new contracts to a volume of up to 10 MW of Around-the-Clock power for 2 years.

1 The requirement of most suppliers would be based on a standard mark-to-market
2 calculation reflecting the total MWh volume of future deliveries under the contract plus
3 outstanding receivables. *****begin confidential information***** [REDACTED]

4 [REDACTED]

5 [REDACTED]

6 [REDACTED]

7 [REDACTED]

8 [REDACTED]

9 [REDACTED] *****end confidential**

10 **information***** This forces VEC to use short-term contracts and/or enter contracts with
11 counterparties with more credit risk, to supply a large portion of its portfolio. Obviously,
12 this risk would make it impossible to enter into such a long-term contract.

13 These HQUS PPA credit terms are extremely important to VEC because they
14 allow us to hedge a significant amount of our annual energy requirements through a long-
15 term contract *****begin confidential information***** [REDACTED]

16 [REDACTED]

17 [REDACTED] *****end confidential**

18 **information*****

19 **Q15. Please explain in what way the PPA offers a flexible pricing hedge.**

20 A.15. The price terms of the PPA are set forth in Article 3 and are described in the joint

_____ [REDACTED]

1 testimony of Mr. Deehan and Mr. Cole. The terms of the PPA provide for the PPA price
2 for the second and each subsequent year to be adjusted on an annual basis using
3 adjustment mechanism as explained in the PPA and the Deehan/Cole testimony. The
4 adjustment mechanism provides a degree of price stability to the PPA price compared to
5 a price that simply tracks the market.

6 For example, Exhibit VEC-6 (which is confidential and filed under seal) shows
7 the annual PPA price for a scenario involving a volatile energy market. Although this is
8 likely an unrealistic market scenario, the Exhibit demonstrates the relative price stability
9 of the contract, the benefit to VEC of market price decreases and the benefit of the
10 dampening of the magnitude of any market price increases. Thus the PPA pricing
11 formula provides protection against a significant portion of the increase in market prices.

12 **Q16. Please provide a comparison of the HQUS PPA with other comparable resources.**

13 A16. The PPA compares favorably to other potential alternatives with similar operating
14 characteristics. Exhibit VEC-7 (which is confidential and filed under seal) shows that the
15 PPA price will be noticeably below market if the PPA price adjustment mechanism index
16 were to track the projected cost of a PPA with the developer of a new natural gas
17 combined cycle plant when adjusted for an assumed market value of capacity. Although
18 the price of power in New England is currently significantly below the cost of power
19 from a new natural gas combined-cycle power plant due to a glut of generation in the
20 region, eventually the glut will no longer exist, and new generation will likely be needed.

1 At that time, or shortly thereafter, the cost of electricity in New England will likely need
2 to approach the cost of a new natural gas plant in order to justify investment.

3 Exhibit VEC-8 (which is confidential and filed under seal) shows that the PPA
4 price will be considerably below market if the PPA price adjustment mechanism were to
5 track the cost of power from a biomass plant located in Vermont when adjusted for an
6 assumed market value of capacity. The costs assumed for the biomass plant are based on
7 discussions with individual developers and are net of the sale of Renewable Energy
8 Credits at \$30/MWh.

9 Exhibit VEC-9 (which is confidential and filed under seal) shows the PPA price
10 will be competitive to the market price if the PPA price adjustment mechanism were to
11 follow a price projection based on:

- 12 • the cost of power on the forward market based on broker sheet data through 2014
13 as of June 17, 2010;
- 14 • the cost of Natural Gas for 2015 – 2022 on the NYMEX as of August 9, 2010,
15 times an implied heat rate; and
- 16 • the cost of Natural Gas for 2022 on the NYMEX as of August 9, 2010, escalated
17 at 2% per year beyond 2022 times an implied heat rate.

18 **Q17. Explain the benefits of the PPA in providing a partial hedge against impacts of the**
19 **Regional Greenhouse Gas Initiative (RGGI) and other potential carbon**
20 **legislation that may require generators to pay for the emission of carbon dioxide**

1 **into the atmosphere.**

2 A17. One of the results of the RGGI or other potential carbon legislation would be to increase
3 the cost of production from fossil fuel units. This will likely get passed through to the
4 consumer through higher Locational Marginal Prices (“LMP”) and prices for contracts on
5 the forward market.

6 The PPA pricing benchmark escalates annually at the proxy for inflation as
7 specified in the PPA. The expected impact of the RGGI and any carbon legislation has
8 theoretically been factored into market prices. Any additional increase in market prices
9 due to spikes in the RGGI prices or carbon legislation will be dampened by the PPA price
10 adjustment mechanism.

11 Thus the proposed PPA acts as a partial hedge against spikes from the impacts of
12 the RGGI and potential additional carbon legislation (or any legislation with similar goals
13 and impacts), which can provide economic benefits to VEC’s members.

14 **Q18. Please discuss how the PPA price adjustment mechanism calculation may lead to a**
15 **lower cost compared to a contract based strictly on the forward market price of**
16 **power.**

17 A18. After the initial contract year, the PPA price will be adjusted based on a combination of
18 general inflation and energy market price indices, as explained in the PPA and in the
19 Deehan/Cole testimony. Due to the formula used to set the annual PPA price, it is
20 expected that over the long term the energy market price index used in the PPA will be

1 less expensive than prices VEC could receive from other suppliers when purchasing
2 short-term contracts based on forward market prices. As a result, VEC expects that the
3 annual PPA prices have a high likelihood of being below the prices of alternatives from
4 other suppliers over the long term, resulting in lower costs and an economic benefit to
5 VEC's members.

6 **Q19. Please explain why you believe that the proposed PPA provides a source of power**
7 **with a high degree of renewable attributes at close-to-non-renewable prices.**

8 A19. The IBT is not sourced from a particular unit or system, but the environmental attributes
9 must be associated with the HQP system mix in Quebec which is guaranteed to be at least
10 90% hydroelectric power. However, the PPA price will likely be highly correlated to the
11 cost of natural-gas-fired units that are typically less expensive than renewable resources.

12 As a result, VEC members are purchasing power with a high degree of renewable
13 attributes at relatively inexpensive prices, providing a net economic benefit to
14 Vermonters when compared to power with similar emission profiles.

15 **Q20. In what ways does the 7x16 profile provide benefits to VEC customers?**

16 A20. The 7x16 profile is not commonly found among alternatives available to VEC.
17 VEC has had discussions with potential suppliers regarding the purchase/sale of a product
18 with a 7x16 profile. However, the 7x16 profile is a product which few generators, and
19 especially renewable generators, offer. Most natural-gas fired and biomass-fired
20 generators are designed for base load operation, and their owners prefer to enter contracts

1 with a 7x24 profile in order to be able to offer the power at competitive prices and meet
2 their financial obligations. Developers of wind projects also prefer 7x24 must-take
3 energy provisions for similar reasons.

4 Suppliers who sell power at a fixed profile through an IBT prefer to sell in 7x24,
5 5x16 or Off-Peak profiles because these are the most common products in the market and
6 thus the easiest to trade. VEC has occasionally found a supplier willing to offer the 7x16
7 product, but at prices that have appeared to include a premium for the risk the supplier
8 must take to liquidate or hedge the remaining 7x8 hours.

9 The profile offered through the HQUS PPA fits VEC's need nicely at prices that
10 are based on a 5x16 profile with an adjustment as described in the PPA as opposed to an
11 adjustment that includes a risk premium such as we have seen from other power
12 marketers.

13 This can be an economic benefit to VEC's members because the profile of the
14 HQUS PPA allows VEC to hedge its costs in the 2x16 time frame more easily than other
15 alternatives.

16 **Q21. Are there other considerations that make the HQUS PPA a favorable option at this**
17 **time?**

18 **A21.** Yes. Forward natural gas prices are relatively low suggesting that now is a reasonable
19 time to lock in the starting price of a long-term contract. Exhibit VEC-10 contains a plot
20 of the Day-Ahead-Market average monthly on-peak LMP at the Internal Hub in the ISO-

1 NE settlement system compared to the final monthly settlement price for Natural Gas at
2 the Henry Hub traded on the NYMEX. The Exhibit shows a strong correlation between
3 the LMP and the NYMEX Natural Gas settlement price. Exhibit VEC-11, which is
4 confidential and filed under seal, contains a plot of the estimated cost of an annual strip
5 of certain forward natural gas prices on the NYMEX based on recent trading. The plot
6 shows that an annual strip of natural gas for the benchmark year is selling near its lowest
7 point in the recent past, suggesting that power is also trading near its lowest level in a
8 similar time period. Setting the initial PPA price at a time when prices are near historical
9 lows can be an economic benefit to VEC's members.

10 **Q22. How does the PPA fit with other resources in VEC's portfolio?**

11 A22. The PPA fits into VEC's resource portfolio well because it provides a degree of
12 reliability to VEC's energy entitlements on an hourly basis in hours of greatest need and
13 it allows VEC to diversify its exposure to any individual cost driver.

14 From an energy perspective, the PPA complements other resources in VEC's
15 portfolio because it provides a reliable source of energy on an hourly basis for
16 approximately 20% of VEC's annual need. The hours in which it will provide energy
17 correspond with those hours in which VEC needs the energy the most and the hours when
18 the spot market for energy is likely to be most expensive. That is in contrast to many of
19 VEC's other committed resources.

1 Specifically, VEC's committed resources beyond 2015 consist of Schedule C-4b
2 of the current VJO Contract, NYPA and VEPPI, all of which are base load resources.
3 VEC has the ability to schedule C-4b power on an hourly basis limited to its 5.671 MW
4 entitlement and an annual capacity factor of 75%. The NYPA contract has some
5 scheduling flexibility to it, but it is more rigid than Schedule C-4b. By 2013, (with the
6 expiration of the Ryegate contract) the VEPPI supply will be largely dependent on the
7 characteristics of run-of-river hydro.

8 The hourly output of the pending/proposed First Wind project in Sheffield,
9 Kingdom Community Wind project in Lowell, and VEC's share of the output of the
10 SPEED Standard Offer contracts will be unpredictable except in very general terms
11 and/or on a very short time horizon due to the intermittent nature of wind, run-of-river
12 hydro and solar power.

13 From a pricing perspective, the proposed PPA complements the other committed
14 and pending/proposed resources because the PPA price will be tied to the price of natural
15 gas (which drives the energy market prices) and a proxy for inflation, at least for the
16 foreseeable future. By contrast, the prices for NYPA, the SPEED Standard Offer Rates,
17 VEPPI power, and the fixed price contract with First Wind are all based on
18 predetermined rates. Some of these rates are flat for the entire period of the contract,
19 while others have escalators that are not directly related to natural gas. Likewise, the
20 price for Schedule C-4b of the current VJO contract is largely based on capital costs.

1 There are occasional adjustments every five years to the capacity cost and an annual
2 adjustment to the energy rate, but the costs are largely stable and the impact of natural
3 gas prices is minimal. Finally, the effective price of the Kingdom Community Wind
4 power will be a function of the actual costs incurred by GMP for construction, operation
5 and maintenance of the project divided by output of the project.

6 Thus, aside from any excess or shortfall in our portfolio that is settled through the
7 ISO-NE, the HQUS PPA is the only one of VEC's committed or pending/proposed
8 resources that is tied to the price of natural gas. This diversity balances VEC's power
9 portfolio and thereby provides some degree of risk insulation.

10 **Q23. Have you identified any risks associated with the PPA and if so are there**
11 **countervailing considerations that justify the risks?**

12 A23. During periods when energy market price index remains significantly below the inflation
13 index, the HQUS PPA may be above market for an extended period due to the calculation
14 of the annual PPA price and the impact of the cap on annual PPA price adjustments. This
15 would leave VEC paying more than it otherwise would need to if it were purchasing at
16 market-based prices. This risk is present in all fixed-price contracts.

17 Adding to that risk, the potential new supply of natural gas at the Marcellus Shale
18 site may have significant impact on natural gas prices. Since the Marcellus Shale
19 potential is widely publicized, it is likely that the impact has been factored into the price
20 of both natural gas and power on the forward market to some degree. The exact amount

1 will eventually be determined by the amount of gas that is extractable and the cost to
2 extract it. Drilling is expected to increase over the next decade or more. If that occurs, it
3 will likely keep the price of natural gas lower than it otherwise would have been.
4 However, to what extent is unknown due to the uncertainty of the output, the cost of
5 drilling, economic growth and any new reliance on natural gas. In any event, even with
6 the HQUS PPA and VEC's other pending/proposed resources, VEC continues to have a
7 need for power. Accordingly, it would still be in a position to take advantage of the
8 decrease in market prices through other procurements.

9 Because the proposed HQUS PPA is an energy-only contract, the cost
10 effectiveness of the contract with respect to new generation can be affected by the
11 amount of revenue the generator can receive through the capacity market compared to
12 the amount VEC has assumed in its analyses. For example, if generators begin receiving
13 more revenue through the capacity market, the revenue required to be collected through
14 the energy market would be less than that assumed by VEC in Exhibits 7 and 8.

15 In sum, although these risks are real, VEC believes potential benefits of the PPA
16 justify taking them on.

17 **5. Section 248(b)(6) – IRP**

18 **Q24. Does the proposed HQUS PPA comply with VEC's IRP?**

19 A24. Yes. Section 7-4 of VEC's IRP provides the Results and Conclusions of the Power
20 Supply analysis. This section states that the "Hydro-Quebec . . . contract[] may have

1 value over other market purchases if prices comparable to those assumed in this analysis
2 can be negotiated. Or if credit terms are more favorable than other suppliers required. It
3 should also be noted that [this] source[] will have reduced emissions compared to fossil
4 fuel generation and market purchases, although [it is] not immune to environmental
5 impacts.”

6 Section 11-2 of VEC’s IRP contains the Supply Resource Action Plan. It states
7 “As determined in this IRP study, VEC can possibly meet its object of stable rates and
8 lessened environmental impact by (p)articipat(ing) in discussions with Hydro Quebec .
9 . . to attempt to negotiate long-term, stably priced contracts for energy and/or capacity.”

10 **Q25. What are the major conclusions that can be drawn from your analysis and your**
11 **testimony?**

12 A25. There are three major conclusions to my testimony. They are:

- 13 1) VEC clearly has a need for the energy provided by the PPA even if its load
14 forecasts were overstated by over 35% for 2015 and beyond;
15 2) Even when the potential risks of the PPA are taken into account, it will provide a
16 net economic benefit to VEC’s members; and
17 3) The PPA is consistent with VEC’s IRP.

18 **Q26. Does this complete your testimony?**

19 A26. Yes.

20 11264.67 Doc. No. 106